

U.S. Patent Application Serial No. 10/549,546  
Reply to Office Action dated February 13, 2007

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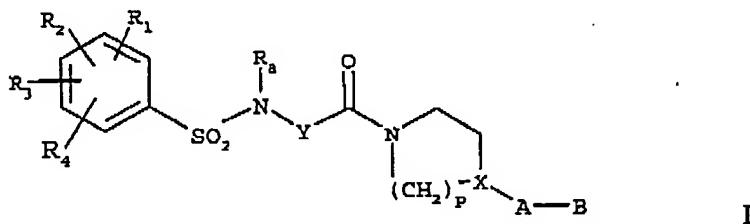
Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A benzenesulphonamide derivative compound, selected from the group consisting of:

a) compounds of formula:



in which,

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> each independently represent one or more atoms or groups of atoms selected from a hydrogen atom, the halogens, C<sub>1</sub>-C<sub>3</sub> alkyl groups, or C<sub>1</sub>-C<sub>3</sub> alkoxy groups, CF<sub>3</sub> or OCF<sub>3</sub> groups,

R<sub>n</sub> represents a C<sub>1</sub>-C<sub>4</sub> alkyl group,

Y represents a saturated C<sub>2</sub>-C<sub>5</sub> alkylene group, optionally interrupted by an oxygen atom, an unsaturated C<sub>2</sub>-C<sub>4</sub> alkylene group, or a -CH<sub>2</sub>-CO-NH-CH<sub>2</sub>- group,

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X represents CH or a nitrogen atom,

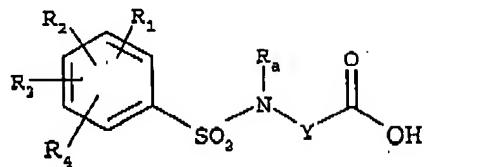
p represents 2 or 3,

A represents a single bond, a nitrogen atom optionally substituted with a methyl group, or a straight or branched C<sub>1</sub>-C<sub>5</sub> alkylene group optionally hydroxylated or of which one of the carbon atoms is oxidized into a ketone function, provided that A and X together do not represent a nitrogen atom,

B represents a nitrogen-containing heterocycle or an amine group optionally substituted with one or two C<sub>1</sub>-C<sub>4</sub> alkyl groups,

- b) addition salts of the above formula I compounds with an acid.
- 2. (Previously Presented) A compound according to claim 1, wherein Y represents a C<sub>3</sub>-C<sub>5</sub> alkylene group interrupted by an oxygen atom, preferably a-CH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>2</sub>- group.
- 3. (Previously Presented) A compound according to claim 1, wherein R<sub>2</sub> and R<sub>3</sub> represent a methyl group at position 2,6 on the aromatic ring.
- 4. (Withdrawn) A method for preparing a formula I compound as defined in claim 1, and its addition salts, comprising:
  - a) allowing an acid of formula:

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II

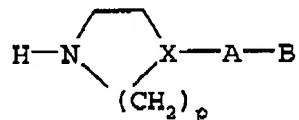
in which

$\text{R}_1$ ,  $\text{R}_2$ ,  $\text{R}_3$  and  $\text{R}_4$  each independently represent a hydrogen or halogen atom, a  $\text{C}_1\text{-}\text{C}_3$  alkyl group, or a  $\text{C}_1\text{-}\text{C}_3$  alkoxy group,  $\text{CF}_3$  or  $\text{OCF}_3$  group,

$\text{R}'_a$  represents a  $\text{C}_1\text{-}\text{C}_4$  alkyl group,

$\text{Y}$  represents a saturated  $\text{C}_2\text{-}\text{C}_5$  alkylene group, optionally interrupted by an oxygen atom, an unsaturated  $\text{C}_2\text{-}\text{C}_4$  alkylene group, or a  $-\text{CH}_2\text{-CO-NH-CH}_2-$  group,

to react with a nitrogen-containing heterocycle of formula:



III

in which

$\text{X}$  represents  $\text{CH}$  or a nitrogen atom,

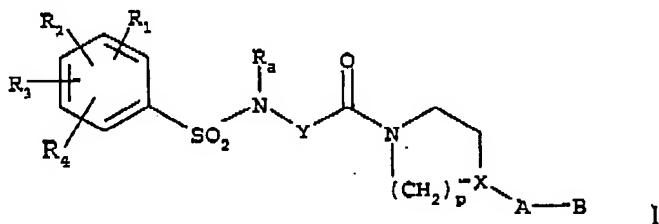
$p$  represents 2 or 3,

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A represents a single bond, a nitrogen atom optionally substituted with a methyl group (if X does not represent a nitrogen atom), or a straight or branched C<sub>1</sub>-C<sub>5</sub> alkylene group, optionally hydroxylated or of which one of the carbon atoms is oxidized into a ketone function,

B represents a nitrogen-containing heterocycle or an amine group optionally substituted with one or two C<sub>1</sub>-C<sub>4</sub> alkyl groups, on the understanding that, should a non-substituted nitrogen atom be present, this nitrogen atom is protected by an amino-protecting group,

in a solvent, in the presence of activators, at a temperature lying between ambient temperature and the boiling point of the solvent, for approximately 2 to 15 hours, to obtain the amide of formula:



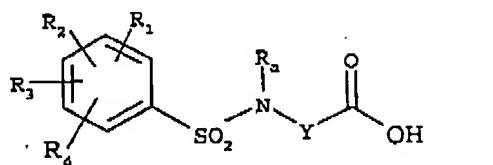
in which R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>a</sub>, Y, p, X, A and B maintain the same meaning as in the starting products.

- b) if necessary, removing the amino-protecting groups,
- c) if necessary, obtaining an addition salt of the formula I compound with a mineral or organic acid.

5. (Withdrawn) A method for preparing a formula I compound as defined in claim 1, and its addition salts, comprising:

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a) allowing an acid of formula:



II

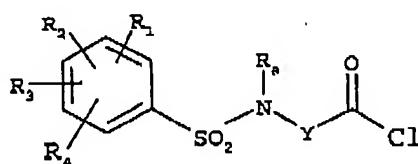
in which

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each independently represent a hydrogen or halogen atom, a C<sub>1</sub>-C<sub>3</sub> alkyl group, or a C<sub>1</sub>-C<sub>3</sub> alkoxy group, CF<sub>3</sub> or OCF<sub>3</sub> group,

R<sub>a</sub> represents a C<sub>1</sub>-C<sub>4</sub> alkyl group,

Y represents a saturated C<sub>2</sub>-C<sub>5</sub> alkylene group, optionally interrupted by an oxygen atom, an unsaturated C<sub>2</sub>-C<sub>4</sub> alkylene group, or a -CH<sub>2</sub>-CO-NH-CH<sub>2</sub>- group,

to react with a chlorination agent, to obtain the acid chloride of formula:



IIa

in which R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>a</sub> and Y have the same meaning as in the starting compound,

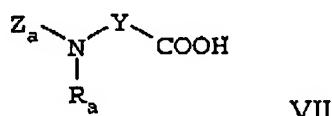
b) allowing the acid chloride of formula IIa to react with an amine of formula III as defined in claim 4, to obtain the compound of formula I,

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- c) if necessary, obtaining an addition salt of the formula I compound with a mineral or organic acid.

6. (Withdrawn) A method for preparing a formula I compound such as defined in claim 1, and its addition salts, comprising:

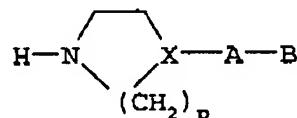
- a) allowing an acid compound of formula:



in which Ra represents a C<sub>1</sub>-C<sub>4</sub> alkyl group,

Y represents a saturated C<sub>2</sub>-C<sub>5</sub> alkylene group, optionally interrupted by an oxygen atom, and Z<sub>a</sub> represents an amino-protecting group.

to react with a nitrogen-containing heterocycle of formula:



III

in which

X represents CH or a nitrogen atom,

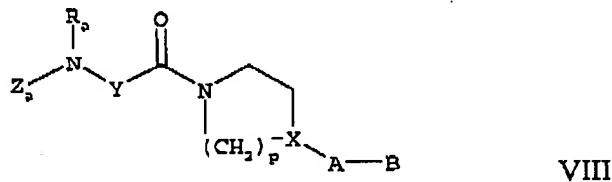
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p represents 2 or 3,

A represents a single bond, a nitrogen atom optionally substituted with a methyl group (if X does not also represent a nitrogen atom) or a straight or branched C<sub>1</sub>-C<sub>5</sub> alkylene group, optionally hydroxylated or of which one of the carbon atoms is oxidized into a ketone function,

B represents a nitrogen-containing heterocycle or an amine group optionally substituted with one or two C<sub>1</sub>-C<sub>4</sub> alkyl groups, on the understanding that, should a non-substituted nitrogen atom be present on said nitrogen-containing heterocycle, this nitrogen atom is protected by a different amino-protecting group to the amino-protecting group used for acid compound VII;

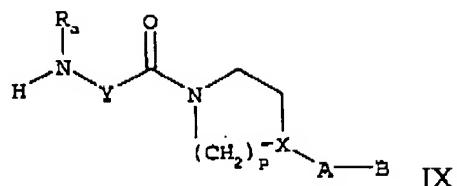
in a solvent, in the presence of activators, at a temperature generally lying between ambient temperature and the boiling point of the solvent, for approximately 2 to 15 hours, to obtain the amide of formula:



in which Z<sub>a</sub>, R<sub>b</sub>, Y, p, X, A and B maintain the same meaning as in the starting compounds,

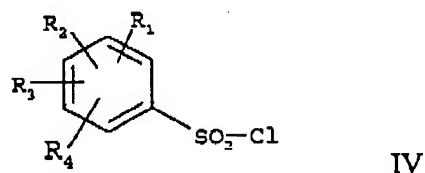
- b) removing the Z<sub>a</sub> amino-protecting group to obtain the secondary amine of formula:

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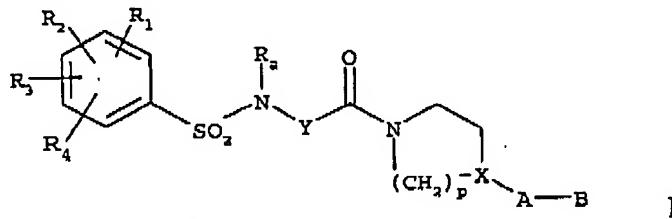
in which R<sub>a</sub>, Y, p, X, A and B maintain the same meaning as in the preceding compound,

- c) allowing this secondary amine IX to react with a benzenesulphonyl chloride of formula:



in which R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each independently represent a hydrogen or halogen atom, a C<sub>1</sub>-C<sub>3</sub> alkyl group, or a C<sub>1</sub>-C<sub>3</sub> alkoxy group, CF<sub>3</sub> or OCF<sub>3</sub> group,

in a solvent, in the presence of an aprotic organic base, at a temperature between approximately 0 and 50°C, for approximately 1 to 3 hours, to obtain the sulphonamide of formula:



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in which R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>u</sub>, Y, p, X, A and B maintain the same meaning as in the starting compounds,

- d) if necessary, removing the amino-protecting groups;
  - e) if necessary, obtaining an addition salt of the formula I compound with a mineral or organic acid.
7. (Previously Presented) A therapeutic composition, wherein, in association with at least one physiologically acceptable excipient, it contains at least one formula I compound according to claim 1, or one of its pharmaceutically acceptable addition salts with an acid.
8. (Withdrawn) A method of using a formula I compound according to claim 1, or of one of its pharmaceutically acceptable addition salts with an acid, for the preparation of a medicinal product intended to treat pain.
9. (Withdrawn) A method of using a formula I compound according to claim 1, or of one of its pharmaceutically acceptable addition salts with an acid, for the preparation of a medicinal product intended to treat inflammatory diseases.